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FM 10-40

DEPARTMENT OF THE ARMY FIELD MANUAL

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QUARTERMASTER AERIAL SUPPLY COMPANY

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HEADQUARTERS, DEPARTMENT OF THE ARMY
JULY 1959

FIELD MANUAL
No. 10-40

HEADQUARTERS,
DEPARTMENT OF THE ARMY
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Air
QUARTERMASTER AERIAL SUPPLY COMPANY

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*This manual supersedes TC 26, 30 August 1951.

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1. Purpose and Scope

This manual provides information necessary for the operation of the Quartermaster Aerial Supply Company (TOE 10-407). It covers the mission, organization, operations, and administration of the company.

2. Modification

Information contained in the manual represents current policy. Policies are subject to modification which will result in the publication of changes. Users of the manual are requested to submit recommendations for changes or corrections directly to the Commanding General, Quartermaster Training Command, U. S. Army, Fort Lee, Va. Information, guidance, and format for the preparation of recommended changes are contained in AR 310-3.

3. Application

a. The information presented in this manual is intended to be used as a guide for personnel concerned with the operation of the quartermaster aerial supply company. Conditions under which the company may operate will vary, thus requiring flexibility in the interpretation and application of basic operating principles.

b. The material presented herein is applicable to nuclear and nonnuclear warfare.

Section II. THE COMPANY

4. Mission

The mission of the quartermaster aerial supply company is to—

a. Provide parachute packing, temporary storage, and rigging of supplies and equipment for aerial delivery by Army, Air Force, and/or other service aircraft.

b. Assist in the recovery and evacuation of parachutes and Allied equipment, as required.

5. Assignment

The quartermaster aerial supply company may be assigned to the theater army logistical command, a field army, or an inde-

pendent corps. Normally, the company is attached to a Headquarters and Headquarters Detachment, Quartermaster Battalion (TOE 10-536).

6. Related Units

a. Quartermaster. The aerial supply company has a direct relationship to the following quartermaster units:

- (1) *Airborne Division Quartermaster Parachute Supply and Maintenance Company.* The Airborne Division Quartermaster Parachute Supply and Maintenance Company (TOE 10-337) is organic to the airborne division. The company has the capability to provide the necessary quartermaster air-type items for the aerial delivery of supplies and equipment which accompany the division during the assault phase. Subsequent aerial supply support may be provided by the Quartermaster Aerial Supply Company (TOE 10-407).
- (2) *Quartermaster Service Organization.* The Quartermaster Service Organization (TOE 10-500) provides teams and detachments that can be used for supplying additional personnel for a quartermaster aerial supply company.
- (3) *Quartermaster Service Company.* The Quartermaster Service Company (TOE 10-67) may be used to furnish additional military or civilian labor for aerial supply operations.
- (4) *Quartermaster Air Equipment Repair and Depot Company.* The Quartermaster Air Equipment Repair and Depot Company (TOE 10-417) is designed to establish and operate a quartermaster depot for supply, field maintenance, and reclamation of quartermaster air-type equipment. It provides quartermaster air item supply and maintenance support for the quartermaster aerial supply company.

b. Transportation Units. Transportation required for the movement of rigged loads to designated loading areas must be provided from transportation facilities available to the command to which the company is assigned or attached.

7. Capabilities

The quartermaster aerial supply company is capable of—

a. Requisitioning, receiving, storing, and preparing (to include packing of parachutes and rigging of loads) 150 tons daily of selected items of all classes of supplies and equipment for aerial delivery.

- b. Maintaining prescribed levels of quartermaster air-type equipment, and selected items of all classes of supplies and equipment required for aerial delivery operations.
 - c. Performing organizational maintenance of quartermaster air-type equipment.
 - d. Assisting, as required, in the loading of supplies in aircraft, and the ejection of supplies to be delivered from aircraft in flight.

CHAPTER 2

ORGANIZATION AND PERSONNEL

Section I. ORGANIZATION

8. Company

The quartermaster aerial supply company (fig. 1) consists of company headquarters, two supply and service platoons, and two aerial supply platoons. When one of each is detached for operation as a team and provided administrative and logistic support, the company is capable of operating at two locations.

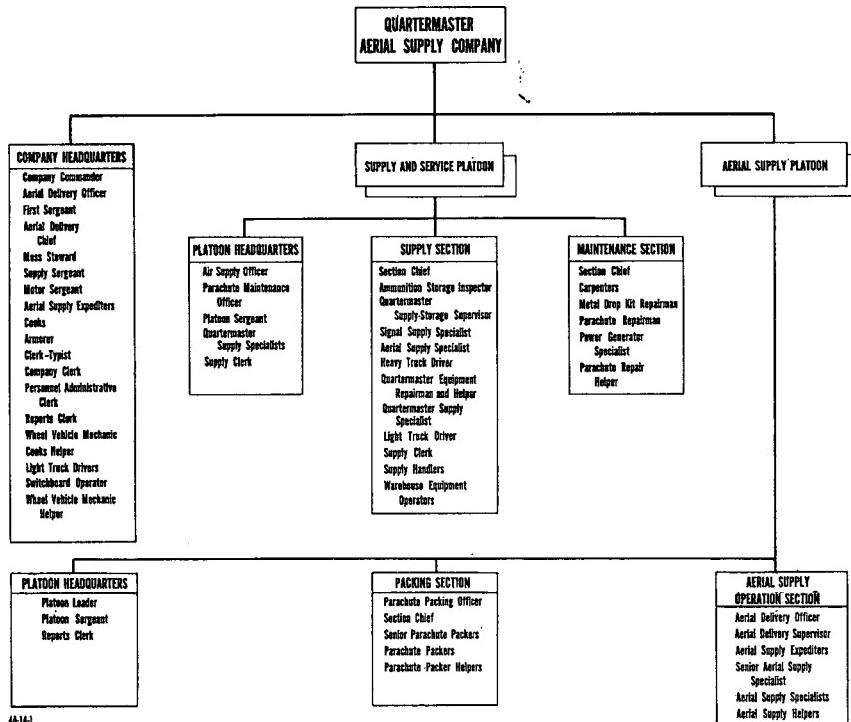


Figure 1. Organizational chart of quartermaster aerial supply company.

9. Platoons and Sections

a. *Supply and Service Platoon.* Each supply and service platoon consists of a platoon headquarters, a supply section, and a maintenance section.

(1) *Supply section.* The supply section—

(a) Requisitions, receives, stores and issues all supplies and equipment to be prepared for aerial delivery.

- (b) Requisitions, receives, stores, and issues quartermaster air-type equipment required for aerial delivery of supplies and equipment.
 - (c) Delivers technical and operating supplies to the packing and aerial supply operation sections.
 - (d) Delivers packed and rigged supplies to aircraft for aerial delivery.
 - (e) Provides personnel when required for paratroop with supplies and equipment to assist in recovery and evacuation of quartermaster air-type equipment.
- (2) *Maintenance section.* The maintenance section—
- (a) Inspects all parachutes and aerial delivery equipment received by the company.
 - (b) Repairs, within the limits of its capabilities, any parachutes or aerial delivery equipment received in a damaged condition.
 - (c) Makes authorized modifications to quartermaster air-type equipment, when required.
- b. *Aerial Supply Platoon.* Each aerial supply platoon consists of a platoon headquarters, a packing section, and an aerial supply operation section.
- (1) *Packing section.* The packing section packs all personnel and cargo parachutes required for the accomplishment of the company mission.
 - (2) *Aerial supply operation section.* The aerial supply operation section rigs and prepares containers and platform assemblies for aerial delivery of supplies.

Section II. DUTIES OF KEY PERSONNEL

10. General

TOE 10-407 prescribes that all officers and warrant officers of the quartermaster aerial supply company be qualified parachutists. All enlisted personnel directly concerned with the maintenance and operation of quartermaster air-type equipment must also be qualified parachutists. While the primary duties are as indicated by the job titles and military occupational specialty numbers in the table of organization and equipment, the mission and workload of the company will require great flexibility in the assignment of the enlisted personnel of the company to specific secondary duty assignments.

11. Company Headquarters

Company headquarters provides the necessary command and

supervision for the company. It is the command post for the company and consists of the company commander and personnel who assist him with the administrative, supply, maintenance, and housekeeping functions necessary for the support of the company.

a. The *company commander* is responsible for the efficient administration and operation of the company. He—

- (1) Plans and prepares estimates for quarters, mess, and operational facilities.
- (2) Coordinates the administrative and operational activities of the company to insure adequate housekeeping and, at the same time, to keep a maximum number of men available for duty.
- (3) Supervises the maintenance of company records.
- (4) Provides for the security of the company.
- (5) Plans and supervises training programs for company personnel.
- (6) Maintains liaison between the company and related units.
- (7) Supervises inspection of items in storage.

b. The *aerial delivery officer* is responsible to the company commander for all technical operations of the company. He coordinates rigging and loading of supplies for aerial delivery. He supervises organizational maintenance and storage of quartermaster air-type equipment in the company, and serves as company executive officer.

c. The *aerial delivery chief* assists the aerial delivery officer in coordinating the activities of the company. He is assisted by the *aerial supply expeditors*, who act as internal liaison representatives, and the *reports clerk* who maintains operational and production records on the operating elements of the company.

d. Other administrative personnel include the *first sergeant*, *supply sergeant*, *motor sergeant*, *mess steward*, and *cooks*.

12. Supply and Service Platoon

a. *Platoon Headquarters.*

- (1) The *air supply officer* is responsible to the company commander for the timely requisitioning, receipt, storage, issue, shipment, and organizational maintenance of items used in fulfilling the mission of the company. He—
 - (a) Commands and trains the platoon.
 - (b) Maintains stock levels of aerial delivery containers, platforms and platform assemblies, cargo and personnel parachutes, and Allied equipment.
 - (c) Coordinates supply and maintenance activities with the parachute maintenance officer.

- (d) Supervises the warehousing of limited stocks of supplies most frequently dropped in support of combat operations.
 - (e) Advises the company commander on the status of supplies, equipment, maintenance, and personnel.
 - (f) Assumes additional duties that may be assigned by the company commander, such as company supply officer.
- (2) The *parachute maintenance officer* is responsible for training personnel in parachute repair and maintenance. He controls the flow of parachutes and containers to be repaired, and supervises the keeping of records and reports on maintenance and repair operations. He acts for the air supply officer in his absence.

b. *Supply Section.* The *chief* of the supply section assists the air supply officer in requisitioning, receiving, storing, issuing, and shipping items used to fulfill the mission of the company. In the supply section of each supply and service platoon, operating personnel include a *quartermaster supply and storage supervisor*, an *ammunition storage inspector*, *supply specialists* and *supply clerks*, *truck drivers*, *supply handlers*, and *warehouse equipment operators*. The technical service supply and storage specialists inspect and perform in-storage maintenance of ammunition, signal, quartermaster air-type equipment, and other supplies of a technical nature.

c. *Maintenance Section.* The *chief* of the maintenance section directs and supervises the maintenance section, which performs organizational maintenance of quartermaster air-type items. Maintenance operations are performed by *parachute repairmen*, *helpers*, *carpenters*, and *metal drop kit repairmen*. A *power generator specialist* installs, services, tests, and repairs the portable power generator equipment.

13. Aerial and Supply Platoon

a. *Platoon Headquarters.* The *platoon leader* of the aerial supply platoon directs and supervises the operations of the packing section and the aerial supply operation section.

b. *Packing Section.* The *parachute packing officer* directs personnel of the packing section in the packing of parachutes. A *section chief* supervises the *parachute packers* and *helpers*.

c. *Aerial Supply Operation Section.* The *aerial delivery officer* supervises the operations of the aerial supply operation section. Under the supervision of the *aerial delivery supervisor*, the *aerial supply expediters*, *specialists*, and *helpers* assist in the operations.

CHAPTER 3

EQUIPMENT

Section I. GENERAL

14. Trucks and Trailers

The quartermaster aerial supply company is authorized sufficient trucks and trailers for internal administrative and operational purposes. These range from $\frac{1}{4}$ -ton utility trucks to 5-ton tractor trucks which are used primarily for transportation within the company or for supply pickups. For the handling of supplies in the company's warehouses and for loading trucks and aircraft, the company is authorized forklift trucks, warehouse tractors, and warehouse trailers. Vehicles required for the transportation of supplies and equipment prepared for aerial delivery must be made available from designated transportation sources.

15. Sewing Machines

For the repair of parachutes and allied equipment, the aerial supply company is authorized the following types of sewing machines:

a. Medium Heavy Duty. Medium heavy duty sewing machines are used primarily for sewing parachute canopies, light webbing, duck, and canvas. A typical medium heavy duty machine is the Model 31-15 which sews 7 to 32 stitches per inch.

b. General Industrial. General industrial sewing machines are used in sewing heavy canvas and webbing such as pack trays and containers. A typical general industrial sewing machine is the Model 7-33 which sews 2 to 8 stitches per inch, and is used in sewing very heavy canvas, webbing, and slings.

c. Parachute Line Tacking. Parachute line tacking industrial sewing machines perform such special duty operations as line tacking and rope attachment. An example of this machine is the Model 17w15 which is familiarly known for its use in zigzag stitching of parachute suspension lines.

16. Packing-Repair Tables

The aerial supply company is provided with the necessary work surfaces for the inspection, packing, and maintenance of parachutes.

a. Parachute Packing Tables. Parachute packing tables are provided for use in the packing of parachutes. The packing table assembly consists of four 12-foot sections, which make up a work-

ing space 3 feet wide, 48 feet long, and of adjustable height. The sections can be assembled in various combinations to provide packing facilities for parachutes of various sizes.

b. Inspection Table. The company is authorized parachute canopy inspection shadow tables and several sections of parachute packing tables to be used for inspection and classification purposes.

Section II. QUARTERMASTER AIR-TYPE EQUIPMENT

17. General

a. Quartermaster air-type equipment of the aerial supply company includes the parachute assemblies, aerial delivery containers, and aerial delivery platforms and platform assemblies stocked by the company. Organic quartermaster air-type equipment items represent the minimum quantities required for training purposes. Additional quantities of these items utilized in the aerial delivery of supplies and equipment are considered as operating supplies and must be requisitioned as class IV supplies. In addition to a normal stockage of a 9-day level of quartermaster air-type equipment items, the company will stock a 3- to 5-day level of class I, III, V, and selected II and IV items to be rigged for aerial delivery.

b. Information on quartermaster air-type equipment used by the company is contained in technical manuals and technical bulletins of the 10-500 series. These publications describe and illustrate the air-type equipment required for the preparation of supplies and equipment for aerial delivery, provide general information on the various types of aircraft used in aerial delivery operations, and outline procedures used in rigging loads for air drop.

18. Parachute Assemblies

a. Personnel.

- (1) *Parachute, personnel, troop, back, 35-foot nominal diameter, type T-10.* This parachute, which is static line actuated, consists of a canopy, deployment bag, pack, and harness. It is used by airborne troops in all types of airborne operations.
- (2) *Parachute, reserve, personnel, troop, chest, 24-foot diameter.* This parachute, which is actuated manually, is a reserve parachute consisting of a canopy, pilot chute, and pack. It is used by airborne troops in conjunction with the T-10 personnel parachute.
- (3) *Parachute, personnel, back, 28-foot diameter canopy.* This parachute consists of a canopy, pilot chute, pack, and harness. It is actuated manually. This type parachute or

its equivalent is worn by passengers or crew members of aircraft. It is also worn by personnel assisting in the delivery of supplies from aircraft in flight.

b. Cargo.

- (1) *Parachute, cargo, type G-13.* The G-13 parachute has a 24.25-foot canopy and is used with A-7A or A-21 containers for loads up to 500 pounds.
- (2) *Parachute, cargo, type G-12D.* The G-12D parachute has a 64-foot diameter canopy for use with the A-22 containers for loads up to 2,200 pounds, and may be used in clusters for delivery of certain heavy-drop loads.
- (3) *Parachute, cargo, G-11A and G-11, 100-foot diameter.* The 100-foot diameter, G-11A and G-11, parachute is a heavy cargo parachute used alone for loads up to 3,500 pounds and in clusters for delivery of platform assemblies weighing more than 3,500 pounds.
- (4) *Pilot, parachute, cargo type.* The pilot parachute is used to deploy the extraction parachute when required.
- (5) *Parachute, extraction.* The extraction parachute (15-foot diameter and 22-foot diameter) is used to release and extract platform loads from aircraft in flight, to deploy the canopies on extracted loads when the heavy-drop method of aerial delivery is utilized, and to stabilize cushioned loads for high-velocity delivery.
- (6) *Parachute, release.* The release parachute (modified extraction parachute) is used to cut the restraining ties holding the A-22 aerial delivery cargo containers in the aircraft when the gravity method is used.

19. Aerial Delivery Containers

a. Sling, Cargo, Aerial Delivery, 500-Pound Capacity, Type A-7A. The A-7A container consists of four 188-inch straps with friction adaptors and four floating D-rings. The container may be secured in various combinations around supplies to be dropped. This container normally is used for such loads as ammunition, water cans, rations, and fuel drums.

b. Bag, Aerial Delivery, Type A-21. The A-21 container consists of an adjustable open-type sling assembly with straps, duck cover, and quick-release assembly. The inclosing cover of the A-21 container permits the padding of the load and makes the container particularly adaptable to semifragile loads containing medical or signal supplies, weapons, ammunition, or rations.

c. Bag, Aerial Delivery, 2,200-Pound Capacity, Type A-22. The A-22 container is an adjustable open-type sling assembly with rigid skid and scuff pad to provide protection for the load. It is

adaptable to a variety of loads up to 2,200 pounds, and is designed for aerial delivery from the airplanes using the load-release (gravity) system.

20. Aerial Delivery Platforms and Platform Assemblies

The aerial supply company is authorized the following platforms and platform assemblies:

- a. Platform, 11-foot, without tiedown rings and extraction bracket.
- b. Platform, 15-foot, without tiedown rings and extraction bracket.
- c. Platform assembly, 22 feet long by $8\frac{1}{3}$ feet wide.
- d. Platform assembly, 6,000-pound load.

Section III. MAINTENANCE OF EQUIPMENT

21. Responsibility

a. Company Commander. The company commander is responsible for the dissemination of instructions and procedures for maintenance operations. He must make certain that these instructions and procedures are complied with by all members of his command and that authorized maintenance materials are available at all times.

b. Other Officers. Each officer will make certain that the personnel under his command are trained in proper preventive maintenance procedures. It is the duty of each officer to inspect the supplies and equipment under his jurisdiction to make certain that prescribed maintenance procedures and regulations are followed.

c. Enlisted Personnel. Enlisted personnel have a definite maintenance responsibility. Operators of vehicles, sewing machines, and other machines have the chief responsibility for preventive maintenance on their equipment. The operators should notify the mechanics and repairmen what repairs are necessary on their equipment. Parachute maintenance personnel are responsible for inspecting parachutes at specified intervals and reporting damaged components immediately. Supply personnel should periodically check supplies and equipment in storage to make certain that all are in serviceable condition.

22. Quartermaster Air-Type Equipment

Parachutes, aerial delivery containers, equipment bags, and similar quartermaster air-type equipment will be maintained by the parachute repairmen in accordance with AR 750-1670-2 and other applicable regulations.

23. Vehicles and Materials Handling Equipment

The trucks, trailers, power generators, and heaters will be maintained by the operators and company mechanics as prescribed in TM 9-2810 and the appropriate vehicle technical manual. The operators and mechanics will also be responsible for maintaining the company's forklift trucks and warehouse tractors as prescribed in TM 10-1600 and the applicable equipment technical manuals.

24. Records and Reports

Maintenance and inspection operations performed on parachute assemblies will be recorded in the Army Parachute Log Record (DA Form 10-42), as outlined in AR 750-1670-2. The vehicle maintenance records prescribed by AR 700-2300-1 will be kept by the unit motor personnel. Where maintenance record forms covering items of equipment or machinery have not been prescribed, records may be improvised to insure that scheduled maintenance services are performed. Special reports may be required by higher authorities depending upon the local situation.

CHAPTER 4

OPERATIONS

Section I. CONCEPT OF OPERATIONS

25. General

The aerial supply of troops in a theater of operations is a principal supply method and is integrated within the logistical system at theater level. The increased mobility and dispersion of combat units, the necessity for reduced levels of supply in the combat zone and the location of supply bases farther to the rear make aerial supply not only desirable but essential. Aerial supply may be accomplished through delivery of supplies by both air landing and aerial delivery (unloading supplies from aircraft in flight).

26. Types of Aerial Delivery

a. Free Drop. Free drop is delivery of certain nonfragile items of supply from aircraft in flight without the use of parachutes or any other retarding devices. Items that are to be delivered by free drop require special preparation to prevent damage from landing shock. Items such as liquids require durable, flexible containers, whereas other items require padding or reinforced baling.

b. High-Velocity Drop. High-velocity drop is delivery from aircraft in flight of certain supply items specially rigged for drop with an energy absorber attached to the underside of the load and a stabilizing device, such as a ring-slot parachute, attached to the top of the load to keep it in an upright position. The stabilizing device is designed to minimize oscillation of the load and to create just enough drag to hold the load upright during descent so that it will land on the energy absorber.

c. Low-Velocity Drop. Low-velocity drop is the delivery from aircraft in flight of various supply and equipment items by use of cargo parachutes. Such loads are specially prepared for drop by either packing the items in aerial delivery containers or rigging them to platforms. Cargo parachutes are then attached to the load or to the platform to retard descent of the load and to insure minimum landing shock.

27. Responsibility

The AC of S G4 (Logistics Officer) at each command echelon normally exercises coordinative (general) staff supervision over aerial supply activities. He is assisted by the staff quartermaster

who furnishes technical advice, recommends plans for employment, provides necessary aerial delivery equipment and trained personnel, and exercises operational control over quartermaster units engaged in aerial delivery operations. Preparation and implementation of aerial supply, including aerial delivery plans, is a responsibility of AC of S G3 (Operations and Training Officer) and AC of S G4 (Logistics Officer), with the quartermaster acting as technical representative. AC of S G4 (Logistics Officer) directs movement control and release of supplies required. He also coordinates airlift requirements through appropriate transportation agencies.

28. Role of Aerial Supply Company

- a. The primary function of the quartermaster aerial supply company is to rig all classes of supply for aerial delivery. The company operates in the theater administrative zone or combat zone in the vicinity of an air terminal and supply depots. It assists in the support of airborne or ground operations by—
 - (1) Aerial delivery of supplies and equipment.
 - (2) Redeployment of weapons and equipment by air.
 - (3) Rigging of supplies and equipment for aerial delivery during mountain, jungle, arctic, or desert operations.

- b. In addition to the organic equipment authorized by TOE 10-407, the company has access to quartermaster air-type items stocked in depots as class IV supplies. The company may requisition these supplies as required for operational purposes.

- c. The company will normally operate in one location on a single shift 12-hour work day. When sustained operations are required, each platoon can operate on a 10-hour shift for limited periods of time. Requests received in the evening should be fulfilled by the following morning. This requires the company to perform much of its work at night.

Section II. PREPARATION FOR OPERATIONS

29. Reconnaissance

The general area in which the aerial supply company will operate is normally designated by the command to which the company is assigned. The general site location must tie in with depot as well as airfield complexes. After the general area is designated, the company commander usually makes a reconnaissance to select the most desirable site within the general area.

30. Site Selection

The principal factors to be considered in site selection are—

a. Location. The company should be located at or near the air terminal that serves as the base of operations for supporting aircraft. The site should be close to road and rail nets leading to sources of supply and to marshalling areas near the air terminal.

b. Space Requirements. Exact space requirements for the company must be determined on the basis of assigned mission, prescribed stock levels, and other logistical considerations. The quantities of equipment and supplies required to be stored and the working space necessary for packing, maintenance, and rigging operations demand a relatively large operating site. Based upon the quantities of material authorized by the TOE, estimated minimum requirements total approximately 380,000 square feet. Suggested procedures for space computation and reporting are contained in FM 101-10 and TM 743-200.

c. Terrain. Level ground adjacent to the company working area is necessary for bivouac, parking, and temporary storage. The ground should be reasonably high, with slopes affording good drainage. Gravel should be used, if possible, since even the best terrain will become muddy with heavy truck traffic during rainy weather. In cold weather, the company should be located in an area where natural protection is provided against wind and cold. In hot weather, the location should provide as much air circulation as possible.

31. Layout of Company

The commander of the aerial supply company should develop a plan for the layout (fig. 2) of the company. When permanent buildings are not available, temporary buildings should be erected, if possible, or tents may be requisitioned to provide shelter for operations requiring protection from the weather. Among factors to be considered in planning the layout are—

a. Company Headquarters. Company headquarters should be as close to the operating area as possible. For planning purposes, an estimated 80,000 square feet is required for company headquarters layout.

b. Maintenance and Parachute Packing Operations. The layout for maintenance and parachute packing operations is determined by floorspace requirements. For planning purposes, an estimated 20,000 square feet of covered space is required for the layout.

c. Aerial Supply Operations. The largest area required for aerial supply operations is for the storage sheds or tents, outside storage areas, rigging area, and the dispatching area. Road nets

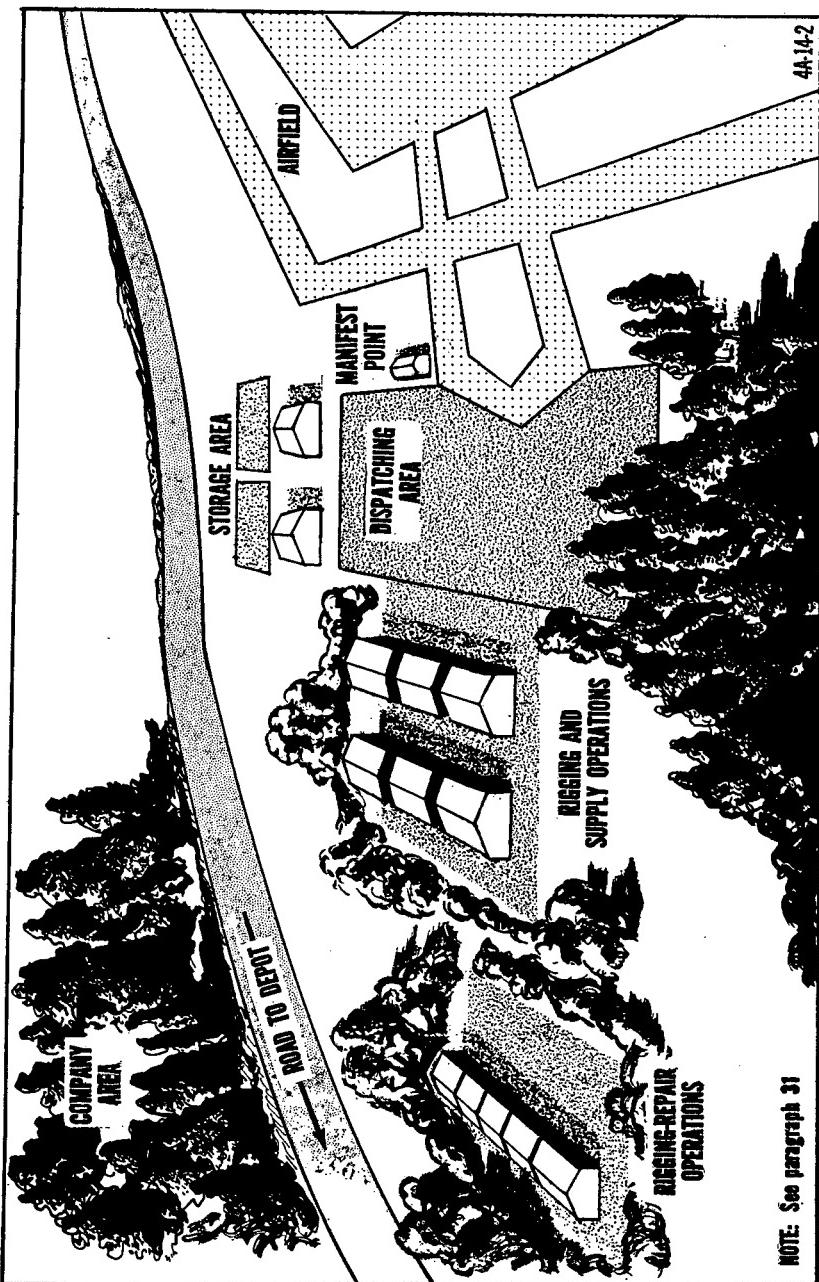


Figure 2. Layout of aerial supply company (suggested).

are important considerations in the layout of the aerial supply warehouses. For planning purposes, an estimated 280,000 square feet is required for aerial supply operations layout. This includes storage space requirements for supplies and equipment of all services being stored or readied for aerial supply.

d. Maintenance and Parachute Packing Operations. Maintenance and packing operations will require the equivalent of several buildings with approximately 20,000 square feet of floorspace. Considerable floorspace will be occupied by packing tables, arranged in 48-foot or 60-foot lengths. As large cargo parachutes are normally packed on the floor, sufficient floorspace must be made available for packing these parachutes. Provision must be made for issuing maintenance supplies. A suggested layout for a packing shed is shown in figure 3.

e. Aerial Supply Operations. Aerial supply operations will require a minimum of 80,000 square feet of covered space for organizational equipment and for those operating supplies requiring protected storage. In addition, approximately 200,000 square feet of outside space will be needed for rigging operations and for the receipt and storage of those supplies to be air dropped and not requiring indoor storage.

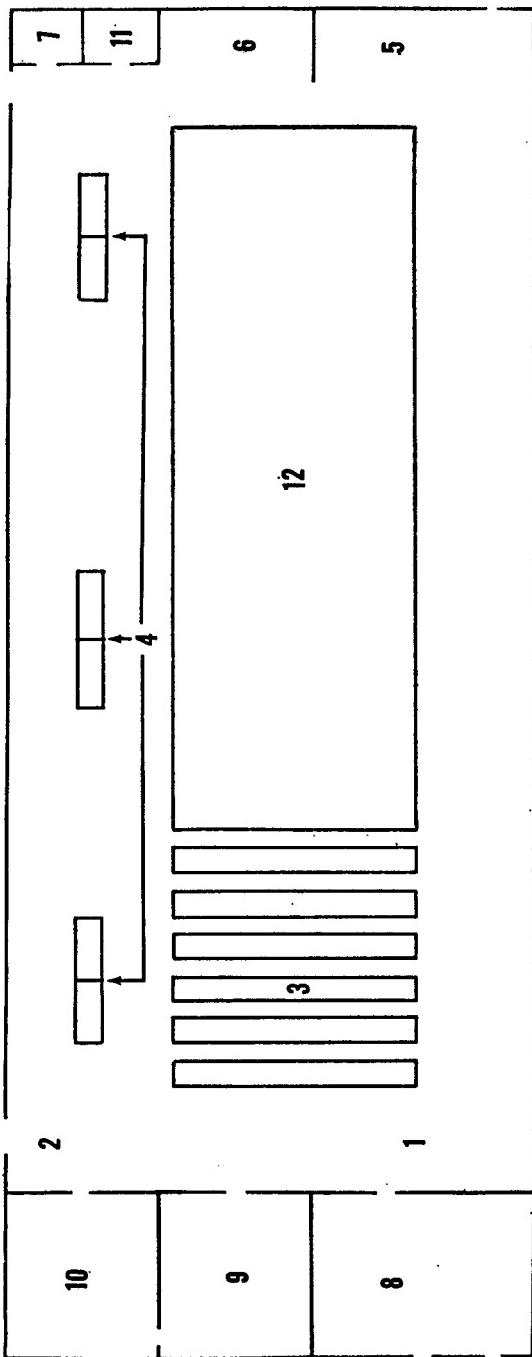
f. Other Layout Requirements.

- (1) *Manifest shed.* A manifest shed or tent should be erected near the dispatching area and loading strip, where the rigged supplies and equipment may be grouped into assigned aircraft loads.
- (2) *Storage areas.* Temporary outdoor storage areas may be necessary for certain phases of company operations. Rigged supplies for an aerial delivery mission may require storage overnight or even for a few days, depending on weather conditions, tactical situations, and logistical requirements. In such cases, the dispatching area or adjacent storage areas may be used. Supplies and equipment should be stored in such a manner as to be protected against weather, vermin, theft, sabotage, fire, and enemy observation. The company is provided with paulins to protect supplies or equipment in open storage.

Section III. INSPECTING AND PACKING PARACHUTES

32. General

The inspecting and packing of personnel and cargo parachutes make up the largest part of the workload of the maintenance and



LEGEND

- | | | | |
|---------|---|----|---|
| 1 and 2 | Receiving Point (Parachutes from Supply) | 7 | Latrine |
| 3 | Parachute Packing Tables | 8 | Boiler Room |
| 4 | Final Inspection Tables | 9 | Packing Section Office |
| 5 | Pickup Point (Packed Parachutes to Supply) | 10 | Deployment Bag and Static Line Inspection |
| 6 | Pickup Point (Damaged Parachutes to Maintenance Shed) | 11 | Expendable Supply Room |
| | | 12 | Heavy Cargo Parachute Packing |

4A-13

Figure 8. Layout for parachute packing shed (suggested).

packing sections of the aerial supply company. Efforts should be made to rotate personnel so that each parachute packer and repairman may become proficient in all stages of inspecting, packing, and repairing parachutes and related equipment.

33. Flow of Parachutes

The relationship of inspecting and packing operations to the overall operations of the aerial supply company is illustrated in figure 4. All parachutes received by the supply section are given an initial inspection. If the inspection shows no repairs are necessary, the parachutes are forwarded to the packing section to be packed and returned to the supply section for reissue. If inspection shows that repairs are necessary, the extent of damage will be determined. Parachutes requiring only organizational maintenance will be forwarded to the maintenance section for repairs. They will then be inspected and returned to the packing section. Parachutes requiring field maintenance will be forwarded from the supply section to the maintenance section for immediate processing to the unit providing field maintenance support.

34. Inspections

In-storage, routine, pack in-process, and pack inspections, are performed in accordance with AR 750-1670-2. Only qualified personnel will be authorized to make these inspections.

35. Packing Methods

Parachute packing operations are organized in accordance with local conditions. The packing procedures for each type of parachute are discussed in appropriate publications.

Section IV. REPAIR OPERATIONS

36. General

The organizational maintenance of parachutes and Allied equipment constitutes a part of the workload for the supply and service platoon of the aerial supply company. Repairs are performed by the maintenance section. The division of duties within the section must remain flexible so that all maintenance personnel will be trained to meet demands of a variety of repair operations. The

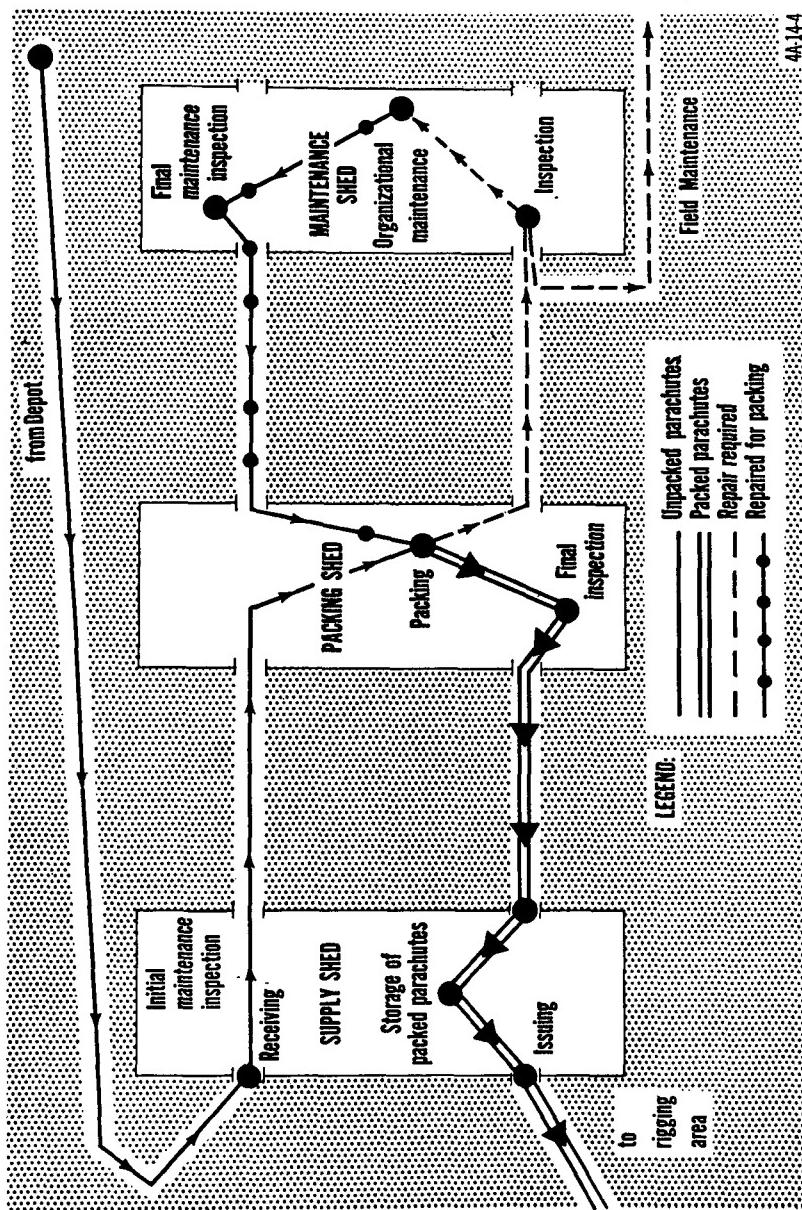


Figure 4. Flow of parachutes through sheds.

relationship of repair operations to the overall operation of the company is discussed in paragraph 33.

37. Repair Responsibility

The aerial supply company is charged with the organizational maintenance of its parachutes and Allied equipment, as defined in AR 750-1670-2.

38. Forms and Reports

Forms and reports used by the company in the repair and maintenance of parachutes are described in AR 750-1670-2. A daily report of all maintenance activities will be submitted to company headquarters.

Section V. STORAGE OPERATIONS

39. Responsibility

The commander of the aerial supply company is responsible for the storage and safeguarding of all supplies and equipment within the company and operating areas.

40. Requirements

Requirements and procedures for storage of personnel and cargo parachutes are contained in AR 750-1670-2.

a. Personnel Parachutes. Personnel parachutes must be stored under suitable shelter, preferably in wooden bins or shelves, and protected from sunlight and dampness. Each bin or shelf should be clearly marked as prescribed in paragraph 42a.

b. Cargo Parachutes. Cargo parachutes must be stored under suitable shelter, protected from sunlight and dampness. Small cargo parachutes may be stored in wooden bins or shelves. Larger parachutes should be stored in stacks on suitable pallets or dunnage; the stacks should not be more than three high and should be clearly marked with quantity, type, and repack date.

c. Aerial Delivery Containers. Aerial delivery containers may be stored in stacks set on pallets or dunnage to protect the containers from dampness and to provide proper air circulation. During storage the stacks should be inspected frequently to detect damage.

d. Aerial Delivery Platforms and Platform Assemblies. The weather-resistant components of the aerial delivery platforms and platform assemblies, such as wooden and metal platforms, may be stored in open storage. Wooden platforms will always be stored vertically. Open storage requires dunnage to protect platforms from ground water and paulins to protect them from weathering.

The straps, slings, and other components should be stored in bins under suitable shelter.

e. Supplies and Equipment. Supplies and equipment received for aerial delivery may require temporary storage. Requirements for storage will vary with the types of supplies to be rigged, but normal operations will usually permit outdoor storage. Rigged supplies and equipment may be stored temporarily in the marshalling area while waiting for loading operations.

41. Inventories

It is important that the aerial supply operation sections have ready reference to tables of serviceable quartermaster air-type equipment. Inventories are conducted periodically to enable the company commander to see at a glance the amount and condition of quartermaster air-type equipment on hand.

42. Forms and Reports

Forms and reports used by the aerial supply company in storage operations are—

a. Parachute Bin Card. The bin card may be a small piece of blackboard or acetate on which packing and inspection dates are entered with chalk or crayon. The card contains latest dates of routine and pack inspections for all parachutes stored in the bin (fig. 8, FM 10-33).

b. Stock Status Record. An informal stock status record of major items of supplies and equipment should be maintained and kept current. It reflects the changes in the stock level of all major supplies and equipment. DA Form 2051-R (Stock Status Report) will be used to assist in determining availability of stocks to meet commitments.

c. Daily Status Report. Each section may be required to prepare and submit a daily status report covering types of personnel authorized or assigned, total man-hours worked, and utilization of organic equipment. The type of information to be reported and forms to be used are prescribed by higher headquarters. The data to be reported may be substantially as follows:

- (1) The supply section may provide information on supply status of quartermaster air-type equipment used by the section as well as on supplies prepared for delivery. This information may include quantities of each item on hand at time of last report; quantities received since last report; quantities issued; and quantities currently on hand.
- (2) The maintenance section may provide such information as quantities of each item on hand at time of last report;

- quantities received, inspected, and repaired; quantities evacuated to field maintenance or salvaged; quantities returned to stock; and quantities currently on hand.
- (3) The packing section may provide such information on packing production as quantities of each item on hand at time of last report; quantities received and packed; quantities returned to stock or to maintenance; and quantities currently on hand.
- (4) The aerial supply operation section may provide such rigging production data as types of containers or loads prepared; number of loads rigged; rigging time required for each load; and tonnages handled.

Section VI. RIGGING AERIAL DELIVERY CONTAINERS

43. Responsibility

The aerial supply operation section of the aerial supply platoon is responsible for rigging supplies in aerial delivery containers. Large-scale operations may require that other sections of the company assist in the rigging of aerial delivery containers.

44. Breakdown of Loads

The order for an aerial supply mission will list the items to be rigged and the total quantity of each item. The aerial delivery officer will be responsible for the distribution of loads to fit standard aerial delivery containers and assemblies. The aerial delivery officer must be familiar with the various types of parachutes, containers, typical loads, and aircraft capacities, in addition to the quantity and weight of the various items to be air dropped. Working with these figures, he then computes the types of containers that are required for the mission, the loads for each container, and the total number of containers.

45. Factors and Considerations

Detailed information on the makeup of aerial delivery container loads; weight limitations for aerial delivery containers; types of items rigged in aerial delivery containers; and parachute and cushioning material requirements for container loads are contained in TM 10-500. This publication and others of the 10-500-series specify in detail the procedures for rigging supplies and equipment for aerial delivery and indicate, in general, the factors and considerations to be taken into account by the aerial delivery officer and other personnel involved in the computation and planning of load breakdown operations.

46. Methods of Rigging Containers

The methods employed in rigging a large number of aerial delivery containers will vary with the number and types of containers required for the mission. Normally, the containers will be rigged by two-man teams, working from the load breakdown chart prepared by the aerial delivery officer. In rigging A-22 containers, teams may work independently, each team assembling, loading, and rigging a complete container, or may work on an assembly-line method. The assembly-line method requires the use of wheeled conveyors laid out on the floor. One team lays out the containers on the conveyor. A second team, aided by materials handling equipment, places the ammunition in position on the open containers. A third team completes the assembly of the container around the load. Qualified riggers then attach the parachutes. A fourth team, using materials handling equipment, receives the rigged containers at the end of the conveyors, chalks the contents and weight (such as 105 ammo., 2,065 lb.) on the outside of the container, and loads the containers onto vehicles made available for delivery of the supplies to the aircraft or marshalling area.

47. Forms and Reports

The load breakdown chart (Aerial Delivery), DA Form 2216-R (fig. 5) serves as the basic directive for the rigging teams. The form is prepared in duplicate by the aerial delivery officer. One copy is used by the rigging team and the second copy is forwarded to the reports clerk, who annotates the container loads by aircraft loads if the unit is directed to load the aircraft, or forwards it to the responsible Air Force unit if the supplies are to be loaded by Air Force personnel. For preparation of flight manifests see AR 59-106. DA Form 2216-R will be locally reproduced on 10½-by 8-inch paper.

Section VII. RIGGING AERIAL DELIVERY PLATFORMS AND PLATFORM ASSEMBLIES

48. Rigging Responsibility

The aerial supply operation section of the aerial supply platoon rigs vehicles and equipment for aerial delivery with aerial delivery platforms and platform assemblies. Large-scale operations may require that other sections of the company assist in the rigging of aerial delivery platform assemblies.

LOAD BREAKDOWN CHART (AERIAL DELIVERY) (FM 10-40)							PAGE NO. /	NO. OF PAGES /	DATE 30 Jun 59	
MISSION NO.	172	GRIDS	B 559091	ESTIMATED DROP (Date and Time) 0840 - 312000Z						
QTY REQ	ITEM	CITY PER PACKAGE	ROR NO. OF PACKAGES	TOTAL QTY PACKED	ITEM WT PER PACKAGE	TOTAL ITEM WT	TYPE OF CON- TAINER	PACKAGES LOAD WT IN CON- TAINER	TOTAL CONT WT	NO. OF CONTAINERS
1	50cc Cr. 30 cal. b. & Amm	2,700	2	5,400	91	182	L/B	2	-	1/3 A
2	.50 mg. Flame	265	6	1,590	97.4	584	L/B	6	-	1/3 A
3	105 mm Amm.	3	30	90	171	5,130	L/B	30	5,896	1/3 A
4	/	/	407	1,221	171	69,597	A-22	11	1,881	2,065
5	900 Combat rations	6	150	900	40	6,000	L/B	15	6,000	7,600
6	2000 ft 86A gear line	50	4	2000	378	1,512	A-22	4	1,512	1,702
7	1 3/4 Ton Truck	1	1	1	5,800	5,800	Assy	1	5,800	7,772
8	1 105 mm how.	1	1	1	5,000	5,000	Assy	1	5,000	5,725
9										
10										
11										
12										
13										
14										
15										
TYPED OR PRINTED NAME, GRADE AND TITLE E. G. CARLIN, WO5G							SIGNATURE	E. G. Carlin,		

DA Form 2216-R, 1 Jun 59

Figure 5. Load breakdown chart (aerial delivery).

49. Methods of Rigging Platform Loads

a. Detailed information on the makeup of aerial delivery platform loads, types of items rigged on aerial delivery platforms, and air-type equipment requirements for rigging platform loads are contained in TM 10-500 and supplementary publications of the 10-500-series. Each item of air-type equipment is designed for a specific function, and therefore the rigging equipment for each load may be separated into functional groups. Distributions and illustrations of these groups, together with standard procedures of application, are contained in TM 10-500 and in other publications listed in appendix.

b. The methods employed in rigging a large number of aerial delivery platform assemblies will vary with the number and type of assemblies required for the mission. Normally, the assemblies will be rigged by five-man teams, working from the load breakdown chart, which specifies the number of each type of assembly. In rigging a large number of assemblies, the assembly-line method may be used, requiring a reorganization of rigging teams. In the assembly-line method a four-man team places the platform on the roller conveyor assembly line and attaches the extraction and deployment group. A second team, using materials handling equipment, places the prepared vehicle or equipment on the platform and the required shock absorbing group under the load. As the assembly continues, two-man teams attach the suspension group, lash the equipment to the platform, and install the parachute stowage group. At the end of the assembly line, the assemblies are loaded aboard trucks provided by supporting transportation corps units for movement aboard trucks to the marshalling area or to the aircraft.

Section VIII. RECOVERY OPERATIONS

50. Responsibility

All quartermaster air-type equipment used in the operations of the quartermaster aerial supply company will be recovered and evacuated by the unit receiving the supplies. A recovery officer, normally appointed by the receiving unit, will direct recovery of equipment after supplies and equipment are retrieved. Personnel from the aerial supply company may paradrop with the supplies to serve as technical advisers to the receiving unit.

51. Recovery Procedure

All quartermaster air-type equipment used in training or in tactical aerial supply operations will be recovered in accordance with AR 750-1670-2 and TB 10-586-1.

a. Training Operations. During training operations, the company may be responsible for the recovery of its organic air-type equipment or, if applicable, arrangements may be made for recovery and return of this equipment by the unit receiving the supplies.

b. Tactical Operations. During tactical operations, the unit receiving the supplies is responsible for the recovery and evacuation of quartermaster air-type equipment to the maintenance facility or unit designated in applicable administrative orders. When parachutes are recovered, they are rolled and placed in the deployment bag or other suitable protective cover for evacuation; extraction and pilot chutes may be rolled and placed in the deployment bag or rolled and tied separately. The equipment will be evacuated by the most expeditious means available. When practicable, recovery personnel will accompany the equipment to guard it against theft or sabotage.

52. Coordination

Loads prepared and/or rigged by the company may be delivered by United States Air Force aircraft or by carriers made available from other sources. When United States Air Force aircraft are used, the rigged supplies are normally loaded aboard and extracted and/or ejected from aircraft under the general direction of Air Force personnel.

a. Preliminary coordination between the company and the appropriate Air Force agency is normally concerned with time schedules; weight limitations, including number, type, and capacity of aircraft; and space available for company personnel required to accompany the load.

b. The information resulting from the coordination between the unit and the appropriate Air Force agency will influence the manner in which the loads are rigged. In rigging and preparing the load the aerial supply company also makes use of load association data which indicates elements of loads which should be dropped together and elements that should be dropped separately. An artillery piece and its prime mover, for instance, must be used together on the ground and represent, consequently, associated loads which should be dropped from the same aircraft. Rations, on the other hand, represent similar loads and should be dropped from separate aircraft.

c. In consideration of both factors (*a* and *b* above), the company will rig all loads. A manifest for each aircraft to be utilized will be prepared by the aerial supply company and submitted to the Air Force. This document will indicate the weight of each load and the type of extraction chute on each load.

CHAPTER 5

ADMINISTRATION

53. General

Broadly defined, administration comprises the management, guidance, training, supply, physical conditioning, leadership, discipline, and morale of company personnel. In a narrower sense, it may be regarded as the means by which the company commander directs the internal operations of the company. Normally, instructions pertaining to such activities as company supply, mess, personnel administration, and training will be contained in standing operating procedures of the battalion or other command headquarters to which the company is attached. When specific instructions are not provided, it may be assumed that the matter falls within the purview of the company commander's judgment.

54. Training

While supervision and guidance may be provided by the headquarters to which the company is attached, the responsibility for training the quartermaster aerial supply company rests with the company commander. To accomplish training, he is provided with—

- a. Army training program (ATP) 10-110 which prescribes individual training for personnel of all quartermaster units.
- b. ATP 10-407 which provides guidance and scope of instruction for the unit training of the company.
- c. Army training test (ATT) 10-407 which may be given to determine the tactical and technical proficiency of the unit upon completion of the training program.

55. Messing

The company has organic personnel and equipment sufficient to operate a company mess. This allows the company to operate independently and at a distance from other units or installations. The company may operate in two separate locations, in which case the company commander must be prepared to allocate mess personnel and facilities as the situation dictates, or arrange for their separate messing. In other cases, depending upon instructions provided by battalion or higher headquarters, the company mess steward and cooks may be placed on duty in a consolidated mess. Sustained round-the-clock operations, however, will require that additional mess personnel be provided.

56. Unit Supply

Unit supply includes the requisition, receipt, storage, maintenance, and issue of clothing, arms, ammunition, individual and organization equipment, fuel, office supplies, and other administrative equipment. It includes also such services as laundry and salvage. Specific instructions and/or schedules by which these supplies and services will be provided will normally be prescribed by battalion or other command headquarters. Within such instructions, the company commander must develop procedures and schedules applicable to the various elements of the company.

57. Records and Reports

Administration involves the maintenance and submission, as required, of a variety of reports dealing with company personnel and/or company activities. Principal among these are the morning reports; daily sick slip; duty roster; and officer and enlisted qualification records, enlisted service records, and other documents which are part of the personnel records jacket and the financial data records folder for officer and enlisted personnel. To insure proper preparation of personnel records, the company personnel administrative clerk may, if directed, be placed on duty with battalion headquarters and work directly under the supervision of the battalion adjutant or personnel officer.

a. Policy File. While not mandatory, the company commander should maintain a policy file containing a summary of such decisions, experiences, or other information as he desires to serve as a guide for company personnel. The policies may be in the form of brief notes, plans, or directives and may include current policies of higher headquarters.

b. Standing Operating Procedure. A standing operating procedure (SOP) should be established to expedite operations and to set forth those instructions the company commander desires to make routine. The SOP should be changed as necessary to meet changing conditions or to modify existing practices. The amount of detail will depend primarily upon the state of training of the company but must be sufficiently complete to serve as a guide for new arrivals to the unit. Normally, the battalion or other headquarters to which the company may be attached will provide a standing operating procedure to which the company SOP must conform.

c. Unit Journal and History. The preparation and maintenance of a unit journal and history are normally regarded as command functions. Depending upon specific command or theater army policy, the history may be a monthly or quarterly review of all company activities. The unit journal is normally prepared on a

daily basis to give a chronological record of events. Detailed instructions concerning the scope and preparation of unit histories are contained in AR 220-345. Information on the daily journal is contained in FM 101-5.

d. Command Report. The company commander may, in the combat zone, be called upon to provide information for the monthly command report prepared, in accordance with theater army policies and/or SR 525-45-1, by the battalion or other headquarters to which the company is attached. The company commander may also be required to submit periodic reports on company operations.

58. Staff Visits and Inspections

Frequent staff visits and inspections will normally be made by the commander or the members of the command headquarters staff to determine the military and technical efficiency of the aerial supply company. Inspections may be classified as follows:

a. Command Maintenance. Command maintenance inspections are made to determine—

- (1) The adequacy and effectiveness of organizational maintenance.
- (2) The proficiency of unit maintenance personnel.
- (3) The adequacy of records, authorized levels of equipment, supply economy practices, and preservation and safe-keeping of authorized tools and equipment.

b. Administrative. Administrative inspections are conducted to determine whether the company is complying with prescribed regulations and directives, command headquarters standing operating procedures, and/or instructions from higher headquarters.

c. Command. Command inspections are made to cover such activities as food service, sanitation, discipline, and general military effectiveness.

d. Tactical and Training. Tactical and training inspections, when made, are used to evaluate training, ascertain readiness of the company for field duty, and correct training deficiencies. Inspections may be formal or informal. Such inspections are normally made before the unit is committed to actual field operations.

59. Procedures in Specific Situations

Certain administrative procedures must be followed when the assigned mission of the company is an initial operation, relief of another company, or change of company commanders. Specific procedures will vary slightly depending upon the situation and the desires of the command headquarters to which the company is attached. The measures listed below are, however, universally applicable. They are not listed in sequence of priority.

- a. Determine exact nature and scope of mission to be performed.
 - b. Obtain all available information on units or troops to be supported.
 - c. Determine time when operations are to begin.
 - d. Submit to command headquarters a statement of critical shortages of supplies and equipment.
 - e. Prepare, review, and revise standing operating procedures as necessary.
 - f. Arrange for installation of communications network.
 - g. Prepare a security and defense plan.
 - h. When change of commanders is involved, conduct inventory of all company property supplies and equipment, audit council book, accomplish transfer of accountability, and inspect all operating elements of the company.

CHAPTER 6

SECURITY AND DEFENSE

60. Responsibility

The responsibility for the security and defense of the quartermaster aerial supply company rests with the company commander. He is responsible for planning and effecting the necessary measures to conceal the company from observation and defend it against attack. He will be guided by instructions from the headquarters to which the company is attached in order that the company's defense plan may become an integral part of the defense plan of the group and/or battalion.

61. Defense Plan

The company defense plan must be flexible and all inclusive so that every foreseeable situation will be covered. The plan should assign definite responsibilities and provide for the strongest active defense practicable with personnel and weapons of the company. It should be simple, clear, and easily understood by all personnel. Generally, one basic plan should be provided to include alternate courses of action for meeting various types of attack.

a. General. Although the company may be attacked by enemy ground forces, requiring company personnel to fight as infantrymen, the company commander will be concerned primarily with defense against attacks by aircraft, missiles, and unfriendly guerrillas and partisans.

- (1) Protection against air attack must be obtained by the use of passive defense measures. The best defense is to avoid detection by screening the company's facilities from enemy view and by dispersing facilities to minimize damage. Protective means include foxholes and slit trenches for individuals; emplacements for weapons; revetments and cuts for vehicles and other equipment; and cover shelters for command posts and communications equipment. The company commander should study the terrain in order to realize maximum advantage of geographic features and man-made structures.
- (2) Defense against ground attack is best accomplished by the use of an outpost warning system, prepared defensive positions, and a mobile reserve. The plan for defense against ground attack should include the following:
 - (a) Warning system.
 - (b) Sectors of defense assigned to the various elements of the company.

- (c) Familiarization of personnel with defense positions and duties.
- (d) Use of slit trenches and foxholes.
- (e) Adequate personnel at command post for use as reserve troops.
- (f) Hasty fortifications covering vulnerable avenues of approach.
- (g) Camouflage discipline.
- (h) Coordination with adjacent units.
- (i) Plan for perimeter defense.
- (j) Frequent rehearsals and inspections of the defense system.
- (k) Destruction of materiel.
- (l) Frequent test firing of weapons.
- (m) Firefighting crew.
- (n) Medical evacuation plan.

b. Rehearsals. Plans for security and defense of the area or installation should be rehearsed frequently in order that each individual may become proficient in accomplishing his assigned tasks without hesitation and confusion. The duties of key personnel should be made clear and alternates should be selected in the event key personnel are unable to perform their assigned duties. An effective defense plan that is rehearsed frequently will help minimize damage resulting from enemy air or ground attack.

c. Active Defense. In establishing a defense plan for the operating area, the company commander should consider fields of fire, observation points, and routes of approach and obstacles unfavorable to the enemy. Active defense measures should include coordination with commanders of adjacent units for mutual support and assistance. Such coordination is important in assignment of sentinel posts, formation of patrols, and determination of areas of responsibility.

- (1) *Perimeter defense.* A well-organized and effective defense perimeter provides the best system for protecting the company against surprise attack. The defense plan should provide for adequate defense of the area and should prescribe the duties of personnel in establishing a defensive position. Each man in the defense perimeter should be instructed in his mission, zone of fire, and area of responsibility.
- (2) *Weapons employment.* Defense positions should be prepared so that the fire of one position overlaps the fire of another. Camouflage measures should be carefully implemented.

- (3) *Warning system.* An adequate warning system is the key to defense of the company area. Approximately 10 percent of the company should be utilized in the warning system. The warning system includes observation posts, trip flares, sentinel posts, and patrols to visit sentinel posts and to cover areas beyond these posts which may afford locations for enemy observers.
- (4) *Obstacles.* Natural obstacles such as streams, swamps, ravines, and dense woods near the defense perimeter should be improved with such artificial obstacles as barbed wire, minefields, boobytraps, and roadblocks. These obstacles should be covered by small arms fire.

d. Passive Defense. As the company possesses a limited number of weapons and personnel for conducting an active defense, the company commander must rely heavily on passive defense measures. Passive defense measures are taken to deny the enemy information and observation of company operations and to reduce casualties and damage in the event of enemy attack. For conventional ground or air attack, these measures should include camouflage, concealment, and dispersion.

- (1) Open fields should not be used for vehicular traffic in the unit area. Vehicular tracks on open ground will be visible from the air, indicating that the area is occupied.
- (2) Vehicles should be dispersed at intervals of not less than 50 feet to insure security from aerial attack and artillery fire. Although the dispersion of vehicles is not conducive to the most efficient accomplishment of the functions of the unit, the principles of dispersion must not be sacrificed to obtain greater convenience in operations.
- (3) In winter, camouflage is particularly difficult, which makes dispersion of vehicles and buildings or sheds essential.
- (4) Vehicles must be arranged in such a manner that a pattern is not noticed by aerial observers. Vehicles should not be parked parallel to each other.
- (5) Camouflage needs of the unit will be greater in barren country and least in wooded and/or hilly country. The company should secure and use camouflage nets. Carefully erected camouflage nets afford valuable cover for elements of the unit. Camouflage discipline must be exercised both within and adjacent to the unit area. Individual attention to camouflage discipline must be rigidly enforced. Special attention should be given to the maintenance of proper measures at night, especially in the com-

bat zone, to prevent revealing the unit's position by light from cigarettes, flashlights, and other sources.

62. Nuclear and CBR Defense

The defense plan, to be complete, must include provisions for protection against nuclear and CBR attack. Air and ground defense plans should make provision for defense against nuclear weapons and CBR agents which may be delivered by aircraft, conventional artillery, missiles, and infiltrating ground forces. The CBR plan for the unit may be prepared as part of the overall unit defense plan or as an annex. All personnel should be trained to recognize promptly nuclear and CBR attacks. They should also be familiar with the first aid measures that can be taken and with the measures needed to reduce the effects of the damage. The defense plan should include—

- a. Preparation of company standing operating procedures for defense against nuclear and CBR attack.
- b. A warning system with provisions to designate the type of attack, if practicable.
- c. Provision for and description of duties of fire guards, security guards, and unit CBR personnel.
- d. Training of all personnel in individual protective and first aid measures to be taken in the event of nuclear and CBR attack.
- e. Inspection of materiel received from using units, if contamination is suspected.
- f. Methods for segregating equipment known to be contaminated, if its decontamination cannot be accomplished by unit personnel. Segregation of such equipment should be accompanied by proper marking of the area as a warning to other personnel.
- g. Provisions for maintaining liaison with chemical units for technical advice and assistance.
- h. Use of protective masks, special clothing, and other protective equipment.
- i. Use of protective shelters for personnel and supplies.
- j. Immunization and field sanitation procedures.

63. Rear Area Defense and Damage Control

The defense of rear areas includes provisions for minimizing the immediate effects of a mass destruction weapons attack or natural disaster, and for precluding secondary damage to personnel, equipment, and installations or enemy followup action such as guerilla or airborne attack. Rear area defense and area damage control measures include those taken prior to, during, and following a mass destruction weapons attack or natural disaster.

a. The measures taken prior to an attack or disaster are—

- (1) Adequate prior planning.
- (2) Organizing, equipping, and training area damage control personnel.
- (3) Organizing, training, and equipping a rear area defense force.
- (4) Dispersion and concealment.
- (5) Use of natural cover or any protection afforded by terrain features.

b. The measures taken during and immediately following a mass destruction weapons attack or natural disaster include—

- (1) Control of personnel and traffic (military and civilian).
- (2) Active defense against guerilla or airborne action.
- (3) Fire prevention and firefighting.
- (4) First aid and evacuation of casualties.
- (5) Protection against chemical, biological, and radiological hazards, to include evacuation from heavily contaminated areas.
- (6) Emergency supply of food, clothing, and water.
- (7) Disposal of unexploded ammunition items.
- (8) Initiation of salvage operations and the clearance of debris and other obstructions from roads and installations so that normal operations may be resumed.

c. The company commander will survey his operations and make plans to lessen the possibility and effects of an attack, using all means of passive defense at his disposal. He also plans the action to be taken during and following the attack in order to continue the performance of the unit's mission. His plans are coordinated with the plans of other units by the subarea and rear area security controllers in turn. The plans may be modified or augmented so that the composite of individual plans will fit the requirements of the area. Quartermaster aerial supply units will usually furnish rescue squads whose functions include rescue and removal of casualties, first aid, and decontamination.

64. Demolition

Demolition is a command responsibility. It is normally accomplished on orders of higher headquarters and will be used as a last resort only. The company commander should establish a plan for the rapid and thorough destruction of buildings, equipment, supplies, and records when so directed. The plan must make provisions for rendering unserviceable all equipment and supplies that might be

employed by the enemy, and should include priorities of demolition and methods of destruction. If explosives are to be used, the plan should show type, amount, and placement. In order to make cannibalization by the enemy impossible, each equipment operator must be familiar with the essential parts of equipment that are to be destroyed.

APPENDIX

REFERENCES

1. Administration

- AR 220-70 Companies—General Provisions
AR 310-3 Military Publications—Preparation and Processing
FM 100-5 Field Service Regulations: Operations
FM 100-10 Field Service Regulations: Administration
FM 101-5 Staff Officers' Field Manual: Staff Organization and Procedure
FM 101-10 Staff Officers' Field Manual: Organization, Technical, and Logistical Data

2. Airborne Information

- FM 10-33 Airborne Division Quartermaster Parachute Supply and Maintenance Company
FM 57-20 Airborne Techniques for Divisional Units
FM 57-30 Airborne Operations
TM 57-210 Air Movement of Troops and Equipment
TM 57-220 Technical Training of Parachutists

3. Indexes

- DA Pam 310-1 Index of Administrative Publications
DA Pam 310-2 Index of Blank Forms
DA Pam 310-3 Index of Training Publications
DA Pam 310-4 Index of Technical Manuals, Technical Bulletins, Supply Bulletins, Lubrication Orders, and Modification Work Orders
DA Pam 310-5 Index of Graphic Training Aids and Devices
DA Pam 320-1 Dictionary of United States Military Terms for Joint Usage
AR 320-5 Dictionary of United States Army Terms
AR 320-50 Authorized Abbreviations and Brevity Code

4. Maintenance

- AR 700-2300-1 Motor Vehicles
AR 750-1670-2 Maintenance of Quartermaster Air-Type Equipment
TM 9-2810 Tactical Motor Vehicle Preventive Maintenance Supply Inspection and Training Procedures
TM 10-1600 Organizational Preventive Maintenance Services and Technical Inspections of Materials Handling Equipment

5. Personnel and Training

- AR 611-201 Manual of Enlisted Military Occupational Specialties
- FM 21-5 Military Training
- FM 21-26 Map Reading
- FM 21-30 Military Symbols
- TM 21-305 Manual for the Wheeled Vehicle Driver
- ATP 10-110 Advanced Individual Training of Quartermaster Personnel
- ATP 10-407 Quartermaster Aerial Supply Company
- ATT 10-407 Quartermaster Serial Supply Company

6. Security and Defense

- FM 5-20 Camouflage, Basic Principles and Field Camouflage
- FM 5-20A Camouflage of Individuals and Infantry Weapons
- FM 5-20B Camouflage of Vehicles
- FM 5-20C Camouflage of Bivouac, Command Posts, Supply Points, and Medical Installations
- FM 21-40 Small Unit Procedures in Atomic, Biological, and Chemical Warfare
- FM 21-41 Soldier's Handbook for Nuclear, Biological, and Chemical Warfare
- TM 5-310 Military Protective Construction

7. Special Operations

- FM 31-25 Desert Operations
- FM 31-70 Basic Cold Weather Manual
- FM 31-71 Northern Operations
- FM 31-72 Mountain Operations
- FM 72-20 Jungle Operations

8. Storage and Shipping

- AR 746-2300-1 Color and Marking of Vehicles and Equipment
- SR 746-30-5 Marking of Overseas Supply
- SR 746-30-6 Shipment Digit Marking
- FM 20-15 Tents and Tent Pitching
- TM 5-614 Repairs and Utilities: Preparation of Household Goods for Shipment and Storage
- TM 38-230 Preservation, Packaging, and Packing of Military Supplies and Equipment
- TM 743-200 Storage and Materials Handling
- TM 743-200-1 Storage and Materials Handling

9. Technical Operative Information

- AR 59-106 Operation of Air Force Terminals
- TM 10-263 Clothing and Textile Repair Sewing Machines
- TM 10-269 Repair of Canvas and Webbing
- TM 10-500 Aerial Delivery of Supplies and Equipment—General
 - TM 10-500-10 Rigging M38A1 $\frac{1}{4}$ -Ton Utility Trucks
 - TM 10-500-11 Rigging M37 $\frac{3}{4}$ -Ton Truck
 - TM 10-500-12 Rigging Typical Mass Load
 - TM 10-500-13 Rigging M101 $\frac{3}{4}$ -Ton Cargo Trailer and Trailer Load
 - TM 10-500-14 Rigging Two 4.2-Inch Chemical Mortars and Ammunition
 - TM 10-500-15 Rigging $\frac{3}{4}$ -Ton Cargo Trailer, 4.2-Inch Mortar, and Ammunition
 - TM 10-500-16 Rigging M170 $\frac{1}{4}$ -Ton Frontline Ambulance
 - TM 10-500-17 Rigging Battalion Antitank Weapons System (Bat) and Carrier
 - TM 10-500-18 Rigging M100 $\frac{1}{4}$ -Ton Cargo Trailer and Trailer Load
 - TM 10-500-19 Rigging the 105-mm Howitzer on 15- and 13 $\frac{1}{2}$ -Ft. Platforms
 - TM 10-500-20 Rigging 2 $\frac{1}{2}$ -Ton Cargo Truck M34 and M35 on 22-Foot Platform
 - TM 10-500-21 Rigging D6 Airborne Tractor
 - TM 10-500-22 Rigging M56 Self-Propelled Full-Tracked 90-mm Gun
 - TM 10-500-24 Rigging Radio Set AN/MRC-68
 - TM 10-500-25 Rigging the M212 Road Grader
 - TM 10-500-26 Rigging Wheeled Industrial Tractor
 - TM 10-500-27 Rigging M47, 2 $\frac{1}{2}$ -Ton 6 x 6 Dump Truck
 - TM 10-500-28 Rigging Model W-2, 2 Drums in Line Sheepfoot Road Roller
 - TM 10-500-29 Rigging 7-35-Ton Pneumatic-Tired Towed Type Road Roller
 - TM 10-500-30 Rigging BE-GE Model 7 $\frac{1}{2}$ -Cubic Yd Cap Towed-Type Road Scraper
 - TM 10-500-31 Rigging Cargo Carrier, M29C
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 - TM 10-500-33 Rigging 2 $\frac{1}{2}$ -Ton 2-Wheel Bolster Trailer
 - TM 10-530 Principles of Packing and Rigging Aerial Delivery Containers
 - TM 10-531 The C-119 Monorail System, C-Beam and I-Beam
 - TM 10-533 Aerial Delivery of A-22 Containers

- TM 10-591.....Sewing Machines for the Repair of Parachutes and Allied Equipment
- TB 10-502-1.....Packing and Maintenance of Parachute, Personnel, Troop Back, 35-Foot Diameter, Nylon Canopy, Type T-10
- TB 10-504-1.....Packing the G-11A and G-11 Cargo Parachutes
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By Order of *Wilber M. Brucker*, Secretary of the Army:

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